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KNOWLEDGE AND TEACHING

868 Beside the crafts already mentioned, Papago knowledge included some techniques in counting, measuring and time reckoning. Any individual knew the measurements connected with his craft and those who had older relatives versed in history or star lore [576] might pick up these also. But for a young person to question an older one was considered forward and discourteous so one desiring to learn merely haunted the society of an older relative until information was offered. If he had no relative with the desired knowledge, his chances of learning were small, since prolonged contacts with people outside the family were few.

COUNTING AND MEASURING

802 211 Papago has words for the numbers up to ten; the one for ten definitely meaning "all the fingers". Other numbers are expressed as multiples of ten. For 100, the Spanish word *cien* is used. The Papago, in ancient times, rarely counted as high as this, nor had they a word for it. The expression which indicated counting was "to cut the notches" or "to lay down the sticks". This was done when making an appointment more than the ritual four days ahead. Ten, twelve or sixteen were the usual numbers, indicated by a stick with the proper number of notches or a bundle of small sticks. The recipient marked off a notch every day until the proper time or stood the sticks up in a row and laid one down each day.

802 211 524 In scoring for games, the Papago, according to Culin, used as much as 100 grains of corn[1] but they need not count to 100. Both sides drew from a common pile, uncounted and, when this was exhausted, played until one side had acquired all the corn of the other. In this way, even several hundred grains could be used without the necessity of naming the numbers.

802 211 Another occasion for counting was when one village "sang for" another and every householder among the singers had to receive a gift. On the night before the ceremony, the singers sent to their hosts a bundle of sticks representing the household heads in their party who might be as many as thirty or forty. However, they were not necessarily counted. The messenger connected a name with each stick and in the council meeting of the hosts, he held the sticks

[1] Culin, p. 354.

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up one by one shouting the names and presenting them to the proper gift partners. Each stick recalled to him the name of a particular individual, a difficult form of mnemonics for Whites, but the Papago, trained in memorizing by rote, did not consider it as hard as abstract counting. Something like the same process may be observed today when an Indian, in trading at the store, points to an article, pays for it and gets the change before dealing with the next one.

The Papago word now used for *count* is kwint, obviously from the Spanish *cuentar*. But the writer, in studying a Spanish grammar of the Lower Pima,[1] was puzzled to find a Pima word which was translated count. After much conference with Papagos, it was decided that the word was *ha kiwikitat*, to whip them continually, and seemed to have been derived from the counting of strokes under the Spanish punishment system.

MEASURES

Dry measure was calculated by the basketful. The basket bowl, the winnowing basket and the carrying basket were roughly standard sizes and all had various decorative lines parallel to the rim by which fractions of their content could be measured. In measuring quantities for trade, however, both parties to the bargain used the same basket so they could be sure of equal measure.

For linear measure, parts of the body were used. Women, in making a basket, took as a unit the handbreatdh: the distance between the outstretched thumb and forefinger. Half a handbreadth was the length of the first finger and "less than a handbreadth" the distance between thumb and first finger. For more exactitude, the worker used the distances between various fingertips, with the hand outstretched.

Men measured the length of wood for a bow by the distance from the tip of the second finger to the breast bone, when the arm was stretched forward. The arrow should be as long as the space between the hands when pulling the bow string. Lengths of rope were measured by the distance between the fingertips when the arms were outspread or, for short ropes, the distance from elbow to wrist.

CEREMONIAL NUMBERS AND DIRECTIONS

The Papago ceremonial number is four and four is continually used whenever small amounts are thought of. Possibly, in former

[1] Grammar of the Pima or Nevome, a language of Sonora, from a manuscript of the XVIII Century. Edited by Buckingham Smith, 1862.